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EXAMINER	
AHMED, SALMAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/840,126	Applicant(s) OLSEN ET AL.	
	Examiner SALMAN AHMED	**Art Unit** 2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _27 January 2009_.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-30_ is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1-24 and 27-30_ is/are rejected.
7)☒ Claim(s) _25 and 26_ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on _5/5/2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-10, 12-13, 15-17, 19, 21-24 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zdan (US7020143) in view of Sridhar et al. (US PAT PUB 2007/0050495, hereinafter Sridhar).

Regarding claim 1, Zdan discloses *a hierarchical traffic management system* (figure 1, differential services network 100) *comprising at least one traffic management node* (figure 2, differentiated services edge router) *comprising: a classifier operable to identify and classify incoming traffic streams* (see figure 2 box 220 and column 6 line 36 and 45-50); *and a queuing system* (figure 5, differentiated queuing block 240) *comprising a plurality of queues* (column 7 lines 43-55, an expedited forwarding queue

EF queue 520 with associated token bucket meter TB meter 560, assured forwarding queues AF queue 530 and AFN queue 540 with their associated token bucket meters TB meter 561 and TB meter 562, a best effort queue BE queue 550 with associated token bucket meter TB meter 563, and three egress queues, high priority egress queue 570, medium priority egress queue 575, and low priority egress queue 579) and operable to apply scheduling policies to the traffic streams (see figure 2 box 240 and column 4 lines 43-55 and column 6 line 56-60), *the plurality of queues of the queuing system each comprising: enqueue attributes configured to control a depth of the queue* (see columns 7-8 line 63-15); *and dequeue attributes configured to control scheduling of the queue* (see column 8 line 25-40), *dequeue attributes comprising minimum bandwidth* (see column 6 line 5 and column 8 line 25-40), *maximum bandwidth* (see column 6 line 6 and column 8 line 25-40), *excess bandwidth* (see column 6 line 6 and column 8 line 25-40), *and priority* (see column 5 line 46-49 and column 8 lines 41-67), *wherein each of the plurality of queues has one or more of dequeue attributes defined* (see column 8 line 25-67); *wherein the plurality of queues define a queue hierarchy* (Figure 5, and column 8 lines 25-41, queue hierarchy comprises of hierarchy based on six primary queues: an expedited forwarding queue, four assured forwarding queues, and a best effort queue), *each layer of the queue hierarchy configured to support one or more priority queues comprising one or more of queues configured for minimum bandwidth attribute and one or more of queues configured for excess bandwidth attribute* (Figure 5, and column 8 lines 25-41, queue hierarchy comprises of hierarchy based on six primary queues: an expedited forwarding queue, four assured forwarding queues, and a best effort queue. The expedited forwarding queue (EF queue) 520 is

token bucket metered by TB meter 560 to a maximum configured rate. The assured forwarding queues (represented by AF1 queue 530 and AFN queue 540) are also token bucket metered (by TB Meter 561 and TB Meter 562) to a minimum configured rate but allowed to consume unused bandwidth up to full line rate. The best effort queue BE queue 550 is token bucket metered by TB Meter 563 to the rate which is calculated by subtracting the sum of the EF and AF configured rates from the total link bandwidth. Configured rates must not total more than the maximum link rate. Best effort traffic may end up with no minimum guaranteed bandwidth, but it can still contend for unused bandwidth)*; and wherein a first of plurality of queues comprises attribute and attribute applies to first queue and parent queues of first queue with respect to traffic associated with first queue* (column 7-8 lines 53-15).

Zdan does not explicitly teach propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue as suggested by Sridhar. The motivation is that such approach to scheduling network packet traffic for transmission is efficient relative to approaches that traverse the class-based queuing hierarchy to select packets for transmission (paragraph 0021). Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 2, Zdan teaches the packet scheduling system comprises at least three layers of hierarchy (see column 6 line 45-67).

Regarding claim 3, Zdan teaches the at least a portion of plurality of queues have the minimum bandwidth attribute defined (see column 6 line 5).

Regarding claim 4, Zdan teaches at least a portion of plurality of queues have the excess bandwidth attribute defined (see column 6 line 6).

Regarding claim 5, Zdan teaches at least a portion of plurality of queues have maximum bandwidth attribute defined (see column 7 line 34 and column 8 line 29).

Regarding claim 6, Zdan teaches the attributes not defined at each of plurality of queues have a default value (see column 7 line 65 token).

Regarding claim 7, Zdan teaches each of dequeue attributes are defined for one or more of plurality of queues (see column 8 line 41-67).

Regarding claim 8, Zdan teaches each of plurality of queues set as a priority queue sends traffic ahead of other queues sharing a parent node (see column 8 line 46-67).

Regarding claim 9, Zdan teaches each of plurality of queues having a defined priority attribute have defined a level of priority (see column 8 line 46-67).

Regarding claim 10, Zdan teaches at least some of queues are configured as conditional or unconditional policers wherein conditional policer performs policing conditioned on a congested state of the system and allows queue to exceed its configured rate if bandwidth is available, and unconditional policer limits the rate of queue regardless of the state of the system (column 8 lines 25-67).

Regarding claim 12, Zdan teaches the traffic management node further comprises a pre-queuing operator configured to operate on at least some of incoming traffic streams before the streams enter the queuing system(see column 6 line 37-44).

Regarding claim 13, Zdan teaches the traffic management node further comprises a post-queuing operator configured to operate on at least some of incoming traffic streams after the streams pass through the queuing system (see column 6 line 62-65).

Regarding claim 15, Zdan teaches each of plurality of queues comprises a minimum-rate attribute (column 8 lines 25-67).

Zdan does not explicitly teach attribute being a propagated attribute.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that

operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of attribute being a propagated attribute as suggested by Sridhar. The motivation is that, attributes having propagation ability, enables a system to configure various queues with the propagated value to reliably define flow parameters involving designated queues; thus efficiently supporting Qos requirements of the network. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 16, Zdan teaches each of plurality of queues comprises a priority attribute (column 8 lines 25-67).

Zdan does not explicitly teach attribute being a propagated attribute.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root

class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of attribute being a propagated attribute as suggested by Sridhar. The motivation is that, attributes having propagation ability, enables a system to configure various queues with the propagated value to reliably define flow parameters involving designated queues; thus efficiently supporting Qos requirements of the network. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 17, Zdan teaches (as best understood by the Examiner) the hierarchical traffic management system is located within a network device comprising two or more of the traffic management nodes (see figure 1).

Regarding claim 19, Zdan teaches the depth of a queue is controlled by a specified maximum queue depth (see column 8 line 8-15).

Regarding claim 21, Zdan teaches method for hierarchical traffic management at a network device (figure 2, differentiated services edge router) having a queuing system (figure 5, differentiated queuing block 240) comprising a plurality of layers of hierarchy (Figure 5, and column 8 lines 25-41, queue hierarchy comprises of hierarchy based on six primary queues: an expedited forwarding queue, four assured forwarding queues, and a best effort queue), each layer of the hierarchy configured for supporting one or more priority nodes (see column 8 lines 45-67) and associated with a class (see figure 5

where middle column box 520 EF queue, box 530 AF1 queue, box AFN queue, and box 550 BE queue, and the right column box 570 high priority egress queue, box 575 medium priority egress queue, and box 579 low priority egress queue form a hierarchical structure as corresponds to layer, and see col. 7 line 46-co1.8 line 67 and see col. 9 lines 9-17), logical interface (column 8 lines 25-67), or physical interface (see figure 6 box 250 egress driver), one or more nodes having a guaranteed minimum rate (columns 7-8, lines 63-15), one or more nodes designated for receiving excess bandwidth (columns 7-8, lines 63-15), and one or more nodes having a defined maximum rate (columns 7-8, lines 63-15), the method comprising: classifying incoming traffic streams (see column 6 line 36 and line 45-50); and applying scheduling policies to traffic streams at one or more queues (columns 7-8, lines 63-15), scheduling policies comprising minimum bandwidth (columns 7-8, lines 63-15), maximum bandwidth (columns 7-8, lines 63-15), excess bandwidth (columns 7-8, lines 63-15), and priority (columns 7-8, lines 63-15), wherein traffic up to a specified bandwidth is defined as priority traffic (columns 7-8, lines 63-15); wherein each of layers is configured to support one or more priority queues and comprises one or more of queues configured for minimum bandwidth scheduling policy and one or more of queues configured for excess bandwidth scheduling policy (columns 7-8, lines 63-67); and wherein a first of plurality of queues comprises attribute and attribute applies to first queue and parent queues of first queue with respect to traffic associated with first queue (column 7-8 lines 53-15).

Zdan does not explicitly teach propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue as suggested by Sridhar. The motivation is that such approach to scheduling network packet traffic for transmission is efficient relative to approaches that traverse the class-based queuing hierarchy to select packets for transmission (paragraph 0021). Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 22, Zdan teaches the one or more of the scheduling policies at one or more of the queues have default values applied (see column 7 line 65 token).

Regarding claim 23, Zdan teaches a priority attribute which specifies whether or not priority service at a queue is propagated through a hierarchy of the queue (see column 8 line 25-67).

Zdan does not explicitly teach attribute being a propagated attribute.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of attribute being a propagated attribute as suggested by Sridhar. The motivation is that, attributes having propagation ability, enables a system to configure various queues with the propagated value to reliably define flow parameters involving designated queues; thus efficiently supporting Qos requirements of the network. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 24, Zdan teaches a burst tolerance parameter is associated with a stream enabled with priority propagation (see column 6 line 8-10).

Regarding claim 27, Zdan teaches the scheduling policies further comprise minimum rate propagation which specifies whether or not a minimum rate at a queue is propagated through a hierarchy of the queue (see column 8 line 41 -67).

Zdan does not explicitly teach attribute being a propagated attribute.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of attribute being a propagated attribute as suggested by Sridhar. The motivation is that, attributes having propagation ability, enables a system to configure various queues with the propagated value to reliably define flow parameters involving designated queues; thus efficiently supporting Qos requirements of the network. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 28, Zdan teaches further comprising enabling an oversubscription mode in which oversubscribed streams are reduced in proportion to a specified oversubscription minimum rate (see column 6 line 8-10).

Regarding claim 29, Zdan teaches a computer-readable medium storing computer-executable instructions (see column 4 line 45) for hierarchical traffic management at a network device (figure 2, differentiated services edge router) having a queuing system (see figure 2 box 240 and column 6 line 56-60) comprising a plurality of layers of hierarchy (Figure 5, and column 8 lines 25-41, queue hierarchy comprises of hierarchy based on six primary queues: an expedited forwarding queue, four assured forwarding queues, and a best effort queue), each layer of the hierarchy configured for supporting one or more priority nodes (see column 8 lines 45-67) and associated with a class (see figure 5 where middle column box 520 EF queue, box 530 AF1 queue, box AFN queue, and box 550 BE queue, and the right column box 570 high priority egress queue, box 575 medium priority egress queue, and box 579 low priority egress queue form a hierarchical structure as corresponds to layer, and see col. 7 line 46-co1.8 line 67 and col. 9 lines 9-17), logical interface (column 8 lines 25-67), or physical interface (see figure 6 box 250 egress driver), one or more nodes having a guaranteed minimum rate (see column 6 line 5), one or more nodes designated for receiving excess bandwidth (columns 7-8, lines 63-15), and one or more nodes having a defined maximum rate (columns 7-8, lines 63-15), the instructions comprising: code that classifies incoming traffic streams (see figure 2 box 220 and column 6 line 36 and 45-50); and code that applies scheduling policies to traffic streams at one or more queues (columns 7-8, lines 63-15), the scheduling policies comprising minimum bandwidth

(columns 7-8, lines 63-15), maximum bandwidth (columns 7-8, lines 63-15), excess bandwidth (columns 7-8, lines 63-15), and priority, wherein traffic up to a specified bandwidth is defined as priority traffic (columns 7-8, lines 63-15); wherein plurality of queues define a queue hierarchy, each layer of queue hierarchy configured to support one or more priority queues and comprising one or more of queues configured for minimum bandwidth attribute and one or more of queues configured for excess bandwidth attribute (columns 7-8, lines 63-67), and wherein a first of plurality of queues comprises attribute and attribute applies to first queue and parent queues of first queue with respect to traffic associated with first queue (column 7-8 lines 53-15).

Zdan does not explicitly teach propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein

propagated attribute applies to first queue and parent queues of first queue as suggested by Sridhar. The motivation is that such approach to scheduling network packet traffic for transmission is efficient relative to approaches that traverse the class-based queuing hierarchy to select packets for transmission (paragraph 0021). Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Regarding claim 30, Zdan teaches system for hierarchical traffic management (figure 1, differential services network 100) at a network device (figure 2, differentiated services edge router) having a queuing system (figure 5, differentiated queuing block 240) comprising a plurality of layers of hierarchy (Figure 5, and column 8 lines 25-41, queue hierarchy comprises of hierarchy based on six primary queues: an expedited forwarding queue, four assured forwarding queues, and a best effort queue), each layer of the hierarchy configured for supporting one or more priority nodes (see column 8 line 41-67) and associated with a class (see figure 5 where middle column box 520 EF queue, box 530 AF1 queue, box AFN queue, and box 550 BE queue, and the right column box 570 high priority egress queue, box 575 medium priority egress queue, and box 579 low priority egress queue form a hierarchical structure as corresponds to layer, and see col. 7 line 46-co1.8 line 67 and col. 9 lines 9-17), logical interface (column 8 lines 25-67), or physical interface (see figure 6 box 250 egress driver), one or more nodes having a guaranteed minimum rate (columns 7-8, lines 63-15), one or more nodes designated for receiving excess bandwidth (columns 7-8, lines 63-15), and one or more nodes having a defined maximum rate (columns 7-8, lines 63-15), the method

comprising: means for classifying incoming traffic streams (see figure 2 box 220 and column 6 line 36 and 45-50); and means for applying scheduling policies to the traffic streams at one or more queues (see column 8 line 41-67), the scheduling policies comprising minimum bandwidth (columns 7-8, lines 63-15), maximum bandwidth (columns 7-8, lines 63-15), excess bandwidth (columns 7-8, lines 63-15), and priority (columns 7-8, lines 63-15), wherein traffic up to a specified bandwidth is defined as priority traffic (columns 7-8, lines 63-15); wherein plurality of queues define a queue hierarchy, each layer of queue hierarchy configured to support one or more priority queues and comprises one or more of queues configured for minimum bandwidth attribute and one or more of queues configured for excess bandwidth attribute (columns 7-8, lines 63-67); and wherein a first of plurality of queues comprises attribute and attribute applies to first queue and parent queues of first queue with respect to traffic associated with first queue (column 7-8 lines 53-15).

Zdan does not explicitly teach propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue.

Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root

class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan's system/method the steps of propagated attribute that propagates through hierarchy from a first queue to a root queue, wherein propagated attribute applies to first queue and parent queues of first queue as suggested by Sridhar. The motivation is that such approach to scheduling network packet traffic for transmission is efficient relative to approaches that traverse the class-based queuing hierarchy to select packets for transmission (paragraph 0021). Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zdan and Sridhar as applied to claim 1 above and further in view of Wang et al. (US PAT PUB 2005/0094643, hereinafter Wang).

Regarding claim 11, Zdan teaches each of plurality of queues is configured to allow for an oversubscription mode in which minimum rates are oversubscribed (column 8 lines 25-67) but Zdan and Sridhar do not explicitly teach allocation of bandwidth to plurality of queues is user defined.

Wang in the same field of endeavor teaches in claim 23, each queue is provided with a base weight system and counter to enable users to control the percentage of "free" bandwidth distributed in the different queues, with the "free" bandwidth allocation

means making assignment to a queue based upon such weights, the amount of data present in queue memory, and on the "free" bandwidth available.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan and Sridhar's system/method the steps of allocation of bandwidth to plurality of queues being user defined as suggested by Wang. The motivation is that, by enabling user to define desired bandwidth for queues, enables a system to be robust and flexible to changes to per flow path service requirements; thus making the system efficient. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zdan and Sridhar as applied to claim 1 above and further in view of Miller (US PAT PUB 2005/0091642, hereinafter Miller).

Regarding claim 18, Zdan and Sridhar teach all the limitations of claim 1 above but Zdan and Sridhar do not explicitly teach a user interface configured for use with a platform independent common configuration language.

Miller in the same field of endeavor teaches user interface configured for use with a platform independent common configuration language (paragraph 0066-0068).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate in Zdan and Sridhar's system/method the steps of user interface configured for use with a platform independent common configuration

language as suggested by Miller. The motivation is that UML uses object oriented design concepts and it is independent of specific programming language and Unified Modeling Language is a popular technique for documenting and modeling system. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zdan and Sridhar as applied to claim 1 above and further in view of Abdelilah et al. (US6940864).

Regarding claim 14, Zdan disclose all the subject matter of the claimed invention with the exception of the post-queuing operator is configured to compress packets. Abdelilah et al. from the same or similar fields of endeavor teaches the use of compress user data and repack the data frame before dispatching it to the output (see Abdelilah et al. column 4 line 48-50). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the compression of user data as taught by Abdelilah et al. in the system for and method of differentiated queuing in a routing system of Zdan in order to provide enhance system efficiency.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zdan and Sridhar as applied to claim 1 above and further in view of Wong (US6721796).

Regarding claim 20, Zdan disclose all the subject matter of the claimed invention with the exception of the depth of a queue is controlled by specification of a Random

Early Detection profile. Wong from the same or similar fields of endeavor teaches the use of Random Early Detection admission control mechanism where average buffer length is measured (see column 5 line 46- column 6 line 14). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the RED as taught by Wong in the system for and method of differentiated queuing in a routing system of Zdan in order to provide optimized data throughput and maintaining fairness amongst different flows, particularly for processing arriving data units for allocation in hierarchical buffer systems (see column 1 line 32- 37).

Allowable Subject Matter

8. Claims 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments see pages 10-15 of the Remarks section, filed 1/27/2009, with respect to the rejections of the claims have been fully considered.

Applicant argument regarding 35 USC 112 rejection of claim 17 (see page 10) is persuasive. As such, 35 USC 112 rejection to claim 17 is withdrawn.

Applicant argument regarding 35 USC 101 rejection of claim 29 (see page 10) is persuasive. As such, 35 USC 101 rejection to claim 29 is withdrawn.

Claim 1:

Applicant argues (page 11 last paragraph) that Zdan does not disclose a queue hierarchy comprising layers each configured to support one or more priority queues and comprising one or more queues configured for a minimum bandwidth attribute and

queues configured for excess bandwidth. However, Examiner respectfully disagrees. Zdan does indeed teach the <u>claimed</u> limitations. Specifically, Zdan teaches the <u>claimed</u> limitations of *a hierarchical traffic management system* (figure 1, differential services network 100), *a queuing system* (figure 5, differentiated queuing block 240) *comprising a plurality of queues* (column 7 lines 43-55, an expedited forwarding queue EF queue 520 with associated token bucket meter TB meter 560, assured forwarding queues AF queue 530 and AFN queue 540 with their associated token bucket meters TB meter 561 and TB meter 562, a best effort queue BE queue 550 with associated token bucket meter TB meter 563, and three egress queues, high priority egress queue 570, medium priority egress queue 575, and low priority egress queue 579) and operable to apply scheduling policies to the traffic streams (see figure 2 box 240 and column 4 lines 43-55 and column 6 line 56-60), *a queuing system* (figure 5, differentiated queuing block 240) *comprising a plurality of queues* (column 7 lines 43-55, an expedited forwarding queue EF queue 520 with associated token bucket meter TB meter 560, assured forwarding queues AF queue 530 and AFN queue 540 with their associated token bucket meters TB meter 561 and TB meter 562, a best effort queue BE queue 550 with associated token bucket meter TB meter 563, and three egress queues, high priority egress queue 570, medium priority egress queue 575, and low priority egress queue 579) and operable to apply scheduling policies to the traffic streams (see figure 2 box 240 and column 4 lines 43-55 and column 6 line 56-60) and *dequeue attributes comprising minimum bandwidth* (see column 6 line 5 and column 8 line 25-40), *maximum bandwidth* (see column 6 line 6 and column 8 line 25-40), *excess bandwidth* (see column 6 line 6 and column 8 line 25-40), *and priority* (see column 5 line 46-49 and

column 8 lines 41-67). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a queue hierarchy comprising layers each configured to support one or more priority queues and comprising one or more queues configured for a minimum bandwidth attribute and queues configured for excess bandwidth") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is for the same reasons, Examiner respectfully disagrees with Applicant's assertion that (see page 12 first paragraph) Zdan does not disclose layers of a queuing hierarchy, with each layer of a queue hierarchy having queues configured as specifically set forth in the claims.

Applicant argues (page 13 paragraph one) that Sridhar et al. do not show or suggest a plurality of queues comprising a propagated attribute that propagates through a hierarchy, wherein the propagated attribute applies to the first queue and parent queues with respect to traffic associated with the first queue. In contrast to applicants' claimed invention. However, Examiner respectfully disagrees. Sridhar does indeed teach the cited limitations. Specifically, Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists (i.e. satisfies limitation: a plurality of queues comprising a propagated attribute). If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all

classes up the class hierarchy to the root class are updated (i.e. satisfies limitation: attribute that propagates through a hierarchy) by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (i.e. satisfies limitation: the propagated attribute applies to the first queue and parent queues with respect to traffic associated with the first queue) (paragraph 0064).

Applicant argues (page 13 paragraph one) that there is no attribute that is propagated through a hierarchy and applies to a first queue and parent queues of the first queue with respect to traffic associated with the first queue, as recited in the claims. However, Examiner respectfully disagrees with Applicant's assertion. Sridhar does indeed teach the cited limitations. Specifically, Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists (i.e. satisfies limitation: a plurality of queues comprising a propagated attribute). If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes up the class hierarchy to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (i.e. satisfies limitation: the propagated attribute applies to the first queue and parent queues with respect to traffic associated with the first queue) (paragraph 0064).

As such, claim 1 stands rejected.

Clams 2-20:

Claims 2-20 are also not patentable for the same reasons cited above.

Clams 21, 29 and 30:

Claims 21, 29 and 30 are also not patentable for the same reasons cited above.

Clams 15 and 16:

Claims 15 and 16 are also not patentable for the same reasons cited above.

Clams 23 and 27:

Claims 23 and 27 are also not patentable for the same reasons cited above.

In regards to claim 23, Applicant argues that (page 14 paragraph 3) there is no disclosure of an attribute which specifies whether or not priority service at a queue is propagated through a hierarchy of the queue. However, Examiner respectfully disagrees. Regarding claim 23, Zdan teaches a priority attribute which specifies priority service at a queue (see column 8 line 25-67). Zdan does not explicitly teach attribute being a propagated attribute. Sridhar in the same field of endeavor teaches after a packet is transmitted for a class, if that transmission empties the queue for that class, it is removed from any entries in array 430 in which it is identified and from any ancestor class lists. If that operation empties the ancestor's list, the ancestor is removed from its ancestor's list and removed from array 430 or the timer structure (not shown) if present. The next time for transmission for that class, as well as for all classes (i.e. priority) up the class hierarchy (i.e. priority service at a queue is propagated through a hierarchy of the queue) to the root class are updated by incrementing by the packet size, divided by the allocated rate for the particular class in the tree (paragraph 0064).

Clams 24, 25 and 26:

In regards to claims 24-26, Applicant argues that (page 14 paragraph 4) Zdan does not show or suggest a burst tolerance parameter associated with a stream

enabled with priority propagation; Furthermore, the Examiner has failed to point to any teaching of a burst tolerance parameter associated with a stream; There is no teaching of parameters that indicate how much a stream is permitted to burst beyond a rate constraint. However, Examiner respectfully disagrees with Applicant's assertion. Regarding claim 24, Zdan teaches a burst tolerance parameter is associated with a stream enabled with priority propagation (see column 6 line 8-10, DiffServ domain 105 is a logical Internet region administered by a common authority. Service level agreements (SLAs) are identified by DiffServ domain 105 through contractual agreement between the DiffServ domain 105 administrative authority and the customer. Currently, the global Internet consists of hundreds of DS domains 105 administrated by different authorities. DiffServ domain 105 per hop behaviors honor the signal profile values established throughout the Internet. The currently defined standard PHB groups are Expedited Forwarding (EF), Assured Forwarding (AF), and Best Effort Forwarding (BE) (i.e. satisfies the limitation of burst tolerance parameter is associated with a stream enabled with priority propagation). Expedited Forwarding guarantees forwarding of all packets conforming to configured rate with lowest possible delay and jitter. Non-conforming packets are dropped. Assured Forwarding guarantees a minimum configured forwarding rate. Packets exceeding the configured rate may be forwarded if there are available resources (possibly with a higher drop precedence) (i.e. satisfies the limitation of burst tolerance parameter is associated with a stream enabled with priority propagation), or may be dropped).

Regarding claims 25 and 26, Applicant's argument is persuasive. Prior art rejection to claims 25 and 26 are withdrawn.

Clams 11 and 28:

In regards to claims 11 and 28, Applicant argues that (page 14 last paragraph) oversubscription mode is not taught. However, Examiner respectfully disagrees. Regarding claim 11, Zdan teaches each of plurality of queues is configured to allow for an oversubscription mode in which minimum rates are oversubscribed (column 8 lines 25-67) but Zdan and Sridhar do not explicitly teach allocation of bandwidth to plurality of queues is user defined. Wang in the same field of endeavor teaches in claim 23, each queue is provided with a base weight system and counter to enable users to control the percentage of "free" bandwidth distributed in the different queues, with the "free" bandwidth allocation means making assignment to a queue based upon such weights, the amount of data present in queue memory, and on the "free" bandwidth available (i.e. oversubscription mode).

Similarly, Regarding claim 28, Zdan teaches further comprising enabling an oversubscription mode in which oversubscribed streams are reduced in proportion to a specified oversubscription minimum rate (see column 6 line 5-10 and column 9 line 38-55, DiffServ domain 105 is a logical Internet region administered by a common authority. Service level agreements (SLAs) are identified by DiffServ domain 105 through contractual agreement between the DiffServ domain 105 administrative authority and the customer. Currently, the global Internet consists of hundreds of DS domains 105 administrated by different authorities. DiffServ domain 105 per hop behaviors honor the signal profile values established throughout the Internet (i.e. satisfies the limitations: the burst tolerance parameter is provided for each layer of hierarchy through which priority behavior propagates). The currently defined standard

PHB groups are Expedited Forwarding (EF), Assured Forwarding (AF), and Best Effort Forwarding (BE) (i.e. all relate to oversubscription minimum rate). Expedited Forwarding guarantees forwarding of all packets conforming to configured rate with lowest possible delay and jitter. Non-conforming packets are dropped. Assured Forwarding guarantees a minimum configured forwarding rate. Packets exceeding the configured rate may be forwarded if there are available resources (possibly with a higher drop precedence), or may be dropped. Best Effort Forwarding indicates that a packet will be forwarded if there are available resources, otherwise it may be dropped. Differentiated queuing block 240 receives IP packet 600, examines the MBLK field (i.e. burst tolerance parameter) and places the packet in the appropriate queue. If the IP packet is identified as EF and the EF token bucket meter TB meter 560 reads negative, the packet is dropped. EF traffic cannot exceed a maximum pre-determined rate i.e. over subscription minimum rate). If the packet is dropped, IP packet 600 is forwarded to DQB dropped packet protocol 620. If IP packet 600 is not dropped, queuing manager 510 checks to see if the associated primary queue is empty. If not empty, the packet is conversation queued. If the primary queue is empty, the queuing manager 510 checks to see if the secondary queue can accommodate the packet. If the secondary queue can accommodate the packet, the packet is passed through to the secondary queue (i.e. oversubscription mode). This arrangement allows AF and BE traffic to consume up to full link bandwidth. If the secondary queue cannot accommodate the packet, the queuing manager 510 begins queuing in the primary queue).

<u>Clam 18:</u>

Applicant argues (see page 15 paragraph 2) that Publication No. 2005/0091642 (Miller) does not teach a user interface configured for use with a platform independent common configuration language. However, Examiner respectfully disagrees. Regarding claim 18, Zdan and Sridhar teach all the limitations of claim 1 above but Zdan and Sridhar do not explicitly teach a user interface configured for use with a platform independent common configuration language. Miller in the same field of endeavor teaches user interface configured for use with a platform independent common configuration language (paragraph 0066-0068, Frequently, the OO model is defined using an unified modeling language (UML) (i.e. platform independent common configuration language). UML is a third generation OO graphical (i.e. associated user interface exists as it is graphical (GUI) based modeling) modeling language. The system model has structural, behavioral, and functional aspects that interact with external users called actors as defined in use cases. A use case is a named capability of the system. System requirements typically fall into two categories: functional requirements and non-functional or Quality of Service (QoS) requirements. Functional means what the system should do. QoS means how well or the performance attributes of the function. In common usage, functional can imply both functional and performance. The structural aspect defines the objects and object relations that may exist at run-time. Subsystems, packages, and components also define optional structural aspects. The behavioral aspect defines how the structural elements operate in the run-time system. UML provides state-charts (formal representation of finite-state-machines) and activity diagrams to specify actions and allowed sequencing i.e. platform independent common configuration language. A common use of activity charts is

specifying computational algorithms. Collections of structural elements work together over time as interactions. Interactions are defined in sequence or collaboration diagrams. The requirements of a system consisting of functional and QoS aspects are captured typically as either one or both of two ways: (1) a model is use cases with detailed requirements defined in state charts and interaction diagrams, or (2) specifications as text with or without formal diagrams such as sequence diagrams that attempt to define all possible scenarios of system behavior i.e. platform independent common configuration language.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SALMAN AHMED whose telephone number is (571)272-8307. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Salman Ahmed/

Examiner, Art Unit 2419